

be found breeding in holes or in roofed nests, their eggs concealed from view; but, on the contrary, they build open nests, some of them, as with the pigeons, being very clumsy and conspicuous structures. On the other hand, birds like the creeper, nuthatch, wren, willow wren, and chiffchaff, with the hen birds of sombre colours, would be expected, on Mr. Wallace's theory, to build open cup-shaped nests wherein the sitting bird would be exposed to view; but the two first-named breed in holes of trees, and the others all construct domed nests. It would be easy to take exception to other propositions made by Mr. Wallace, and generally to combat his ingenious theory; but such is not our object here. We have referred to his essay rather for the purpose of redirecting attention to it in connection with the admirable series of birds' nests in the collection under notice which furnishes the reader with illustrations to many of Mr. Wallace's remarks.

As to the birds which rely for the safety of their eggs on their own ability to defend them, whether singly or in pairs or colonies, familiar examples occur to us in the partridge, peewit, and black-headed gull. There must be few observant naturalists who have walked abroad in the nesting time and have not witnessed and admired the extraordinary efforts made by some or all of these birds to decoy the intruder away from their eggs or young by feigning lameness, or to frighten him away from the spot by boldly dashing at his head with loud reiterated cries.

The group, of which an engraving is here given from a careful sketch by Mr. Charles Whymper, represents a pair of little grebes, or dabchicks as they are provincially called, at a pond-side, with their characteristic nest of weeds. The hen bird is just leaving the nest to join her mate, having hastily covered her white eggs to conceal them.

The taxidermist, it will be observed, in this case has been obliged to show them partially uncovered, in order to explain what otherwise might remain unsuspected by those who are unfamiliar with the habits of these interesting birds.

NOTES

THE Queen has been pleased to confer the dignity of a Knight of the United Kingdom on John William Dawson, LL.D., C.M.G., Principal and Vice-Chancellor of the McGill University, Montreal, in the Dominion of Canada.

THE death is announced of Dr. J. J. Woodward, surgeon, United States Army, the well-known microscopist, whose admirable photo-micrographs, produced during his official connection with the Army Medical Museum, Washington, have given the pre-eminence to America for this branch of scientific microscopy.

THE Electrical Conference at Philadelphia has adopted resolutions that steps should be taken to legalise in America the ohm adopted by the Paris Conference, as also the ampere and volt, as electrical standards of measure. It was proposed by Mr. W. H. Preece that the Committee should consider the adoption of the English watt as a unit of power; this was also adopted.

PROF. ROBERT S. BALL lectured in Philadelphia on Wednesday night last week on the distances of the stars. He had a large audience at the Academy of Music.

THE first aerial voyage in England having taken place from the Honourable Artillery Company's ground at Finsbury on September 15, 1784, in the presence of the Prince of Wales, afterwards George IV., preparations were made to fittingly celebrate the 100th anniversary of the event, which occurred on Monday. A committee successfully perfected the arrangements for the ascent of three huge balloons from the grounds at the

rear of the Finsbury Armoury, whence, at 5 minutes after 2 in the afternoon, just a century before, Lunardi, the secretary to the Neapolitan Ambassador in London, started upon the first aerial voyage performed in this country, and ultimately descended, at 20 minutes past 4, in safety in a meadow at Standon, near Ware, Hertfordshire. In the Long Room, Col. Beaumont, R.E., presiding, M. W. de Fonvielle, editor of *La Lumière Électrique*, delivered an address, in which he described the improvements made in the construction and the gear of balloons during the past century, particularly alluding to the improvements effected by the late Mr. Green, the inventor of the cone anchor, which had been the means of saving the lives of so many aeronauts when they drifted out to sea, and had been rescued by passing vessels. He spoke hopefully and sanguinely of the ultimate success of the efforts now being made by gallant French officers to steer balloons by the medium of electric currents.

A SECOND ascent was made on Friday at Meudon in Capt. Renard's new balloon, but this time without the success which attended the former experiment. There was a good breeze. On the previous occasion, it will be remembered, there was only a slight breeze. After resisting the wind and remaining stationary, or nearly so, for a few minutes, the balloon was carried in the direction of Versailles, and, on one of the batteries ceasing to work, descended near Versailles. From there the balloon had to be dragged back to Meudon. The inventors assert that, but for the accident to the battery, they would have returned to Meudon in the teeth of the wind.

M. REGNARD has made a series of experiments on living organisms under high pressures. Yeast was found to be latent after having been subjected to a pressure of 1000 atmospheres for one hour; an hour later it began to ferment in sweetened water. Starch was transformed to sugar by saliva at 1000 atmospheres. At 600 atmospheres *Algæ* were able to decompose carbonic acid in sunlight, but they died and began to putrefy after four days. Cress-seed after ten minutes' exposure to 1000 atmospheres were swollen with water, and after a week began to sprout. At 600 atmospheres Infusoria and mollusks, &c., were rendered morbid and latent, but when removed returned to their natural state. Fishes without bladders can stand 100 atmospheres, at 200 they seem asleep, at 300 they die, and at 400 they die and remain rigid even whilst putrefying.

WE observe that among the three recipients of the gold medals awarded by the University of Christiania is Prof. G. A. Guldberg.

A NEW enemy to the beetroot plantations has appeared in Scania (Sweden) in the shape of the spinach-fly (*Anthomyia spinarise*). It has previously been known as an enemy to spinach, but this year it has also attacked the beetroot plants. Dr. Holmgren believes that its appearance is only periodical.

ALTHOUGH a great deal has been done in Norway and Switzerland to examine and measure the glaciers in those countries, comparatively little has been done in Sweden in this respect. During the last couple of years, however, a glacialist, Dr. F. Svenonius, has been engaged in studying and measuring some of the glaciers in Norrland, and we now learn from the report of this gentleman that there are about a hundred glaciers in Sweden, but that they are very small, the whole covering altogether only nine square miles (Swedish). The area had previously been estimated at thirty square miles.

THE Corporation of Southampton have unanimously resolved to support the movement commenced by the Council of the Hartley Institution a short time ago, in favour of a revised Geological Survey of Hampshire and the Isle of Wight on the maps of the 6-inch scale. The Southampton Town Council will

now invite the Corporations of all the other Hampshire boroughs to join them in the application shortly to be made to the Government on this subject. A large number of landowners and many of the Members of Parliament and Peers connected with the county have already expressed their interest in this matter.

It is stated that Mr. Gamel of Copenhagen has offered to send his steamship the *Dijnphna* on a second expedition to the Arctic regions *viâ* Franz Josef Land, subject to the condition that the Danish Government will, as a moral acknowledgment of their interest in the Expedition, grant a certain sum of money, however small, towards the Expedition, under Lieut. Hovgaard of the Royal Danish Navy.

THE present number of the *Proceedings* of the Natural History Society of Newport (R.I.) contains several papers on the geology of Rhode Island, and one on its birds. There are, in addition, papers on Mount Tacoma in Washington Territory, by Mr. Bailey Willis; on the migration of birds, by Mr. Taylor; and an account of a journey in North-Western Wyoming, by Mr. Wilson. Several of these papers are accompanied by maps or other illustrations; but unfortunately in most cases only abstracts of the papers are given, while in others we get only the titles.

"CONTRIBUTIONS to the Descriptive and Systematic Coleopterology of North America," Part i., is the title of a paper of 60 pages with one plate of details, by Thos. L. Casey, Lieutenant of Engineers, U.S.A. In it are described about sixty new species and some new genera. Lieut. Casey is, we think, a *débutant* in North American systematic entomology, which sustained so severe a loss lately in the death of LeConte; his descriptions appear to be carefully and minutely drawn up, and from his few introductory remarks he seems to be animated by the true scientific spirit, for he says of them: "If they even serve to identify the species, they may be considered to have done their duty."

It is known that *Clymenias*, so widely spread in the Devonian deposits of Western Europe, have not yet been found in Russia—with the exception, perhaps, of the *Clymenia undulata* in the hills of Kielce in Poland. Now, Prof. Karpinsky has discovered remains of this Cephalopod on the Asiatic slope of the Ural, near Verkne-uralsk (*Izvestia* of the Russian Geological Committee, 1884, No. 4). The Uralian fossil is very much like *Clymenia annulata*, Münster, and the few differences render it more like *Clymenia nodosa*, Münster, which is considered by Keyser and Gümbel merely as a variety of the foregoing. Another *Clymenia*, also found in the same locality, but in a worse state of preservation, seems to belong to *C. striata*. This discovery, while establishing one more feature in common for the Russian and West European Devonian, at the same time widens very much the area of distribution of the *Clymenias*, formerly so strictly limited to Western Europe.

A NOTE on a possible source of error in photographing blood corpuscles, by Mr. G. St. Clair, F.G.S., communicated to the Birmingham Philosophical Society, is a fruitless attempt to explain as an optical illusion Dr. Norris's asserted discovery by the aid of photography of a third kind of corpuscle in mammalian blood. The author invokes the principle of the formation of images by the passage of light through small apertures, and conceives that Dr. Norris's "colourless disks" are merely images of the end of the microscope tube or the aperture of the eyepiece, and he seems to have taken some pains to obtain such images by placing under the microscope a slide thickly strewn with small steel disks, and receiving the light on a screen beyond the eyepiece. Had he attempted to focus these ghosts and the real images of the disks *at the same time*, or considered a little more closely the elementary optical principles involved, we venture to say the note would never have been written.

AT the last meeting of the Asiatic Society of Japan a paper was read by Mr. O. Korschelt on "The *Tenken* system of Japanese fortune-telling." The Japanese calendar forms the basis of the system, and by an application of certain rules to the date of a man's birth, his character can be determined. The qualities assigned to each year, month, and day, each of which is represented by one of twelve letters of the syllabary, seem to have some resemblance to the characters of the corresponding calendar animals—tiger, hare, dragon, serpent, &c. From the five syllabary letters corresponding to the year and month of conception, and the year, month, and day of birth, the chief points of a person's character are made out—the most important determining factors being the year of birth and month of conception. Then come to be considered the effect of the stars which are supposed to rule the years, months, and days. For each year there are nine stars, which have their special qualities; and each man's life is to be ruled by one of them. From the mutual relation of these stars, the life relations of two given people can be made out. One very important application of the system amongst the Japanese is the comparison of the ruling stars of two who are contemplating marriage. Similarly, as each instant of time is ruled by a star, it can be determined whether a given year, month, or day will be lucky or unlucky to a certain individual. The method of divination thus described was illustrated by examples, the author having worked out the horoscopes of Cromwell, Carlyle, Bismarck, Napoleon, and other historical characters. From the discussion which followed, it appears that this elaborate system can be traced back to the earliest period of recorded time in China. It is the so-called system of philosophy embodied in the "Yiking," the oldest of all Chinese books, and if it should turn out, as is contended by some eminent Chinese scholars, that this work is not Chinese in its origin, but Accadian, then Japanese divination would be a Western product.

THE *Japan Gazette* reviews a publication by the native Professor of Botany in the University of Tokio, entitled "Nomenclature of Japanese Plants in Latin, Japanese, and Chinese." The list, it appears, does not include all the plants indigenous to Japan, while it includes many which are in no sense Japanese. It is inferior to Franchet and Savatier's "Enumeratio Plantarum Japonicarum," for while the latter gives more than 2700 distinct species of indigenous flowering plants and ferns, the consecutive numbering in the native work only runs up to 2406, and this includes, besides many foreign plants, numerous mere varieties of species, to each of which a separate number has been appropriated. The author, Mr. Matsumura, is said to contemplate the publication of a more elaborate work.

THE additions to the Zoological Society's Gardens during the past week include a Purple-faced Monkey (*Semnopithecus leucoprymnus*) from Ceylon, two Laughing Kingfishers (*Dacelo gigantea*) from Australia, presented by Mr. D. Palgrave Turner; a Lesser White-nosed Monkey (*Cercopithecus petaurista*) from West Africa, presented by Mrs. E. A. Allridge; a Cape Hunting Dog (*Lycan pictus*) from the South-West Coast of Africa, presented by Capt. J. Grant Elliott; a Tigress Cat (*Felis tigrina*), two Ring-tailed Coatis (*Nasua rufa*) from Brazil, presented by Mr. James Meldrum; a Herring Gull (*Larus argentatus*), British, presented by Miss J. Dunford; a Yellow-fronted Amazon (*Chrysotis ochrocephala*) from Guiana, presented by Mrs. Frank Wilson; three Violaceous Night Herons (*Nycticorax violaceus*) from South America, presented by Mr. A. Boon; two Yellow-winged Sugar Birds (*Cereba cyanea* ♂♂) from Brazil, presented by Mr. P. A. Fraser; a Tuberculated Iguana (*Iguana tuberculata*) from Brazil, presented by Mr. J. H. Leech; a Brown Capuchin (*Cebus fatuellus*), a Weeper Capuchin (*Cebus capucinus*) from Brazil, a Malbrouck Monkey (*Cercopithecus*

cynosurus) from West Africa, two Victoria Crowned Pigeons (*Goura victoriae*) from the Island of Jobie, deposited; three Ruddy Flamingoes (*Phenicopterus ruber*) from North America, purchased; two Ring-tailed Lemurs (*Lemur catta*), a Great Kangaroo (*Macropus giganteus* ♂), born in the Gardens.

OUR ASTRONOMICAL COLUMN

ASTRONOMICAL PHOTOGRAPHY.—M. Mouchez, the Director of the Observatory of Paris, has communicated to the Academy of Sciences a brief account of some experimental attempts to photograph very small stars, which have been lately made at that establishment. The ecliptical star-charts, commenced by Chacornac, but interrupted in their formation by his decease, were taken up by MM. Paul and Prosper Henry in 1872. These charts include all stars to the thirteenth magnitude; thirty-six of the entire number of seventy-two required for the whole ecliptical zone were completed by Chacornac; these contain 60,000 stars; while sixteen more, containing 36,000 stars, have been constructed by MM. Henry, who will shortly finish four others, with 15,000 stars. But they now find themselves in face of a difficulty which can hardly be overcome by the ordinary process of charting. The condensation of stars in those regions where the Galaxy traverses the ecliptic is so great as apparently to defy an accurate and complete representation of their stellar contents, on the methods adopted for the greater part of the zone, notwithstanding all the experience and well-known skill of the observers.

They have accordingly had recourse to photography, and their first attempts with a provisional apparatus have succeeded so well that there is every reason to expect by this means a solution of the difficulty in question. On plates covering an extent of 3° in right ascension and 2° in declination, obtained with an objective of 0.16 m. diameter and 2.10 m. focal distance, achromatised for the chemical rays—which M. Mouchez exhibited to the Academy—there are shown some 1500 stars from the sixth to the twelfth magnitude, *i.e.* to the limit of visibility of an objective of that size; the images of the stars have diameters nearly proportional to their brightness, except in the case of the yellow stars, which come out somewhat fainter. These encouraging results have led MM. Henry to commence the construction of a large objective of 0.34 m. diameter, which will be mounted by M. Gautier, and it is anticipated that with this instrument, in the course of an hour, a chart of the stars, to the twelfth magnitude at least, and probably to the thirteenth or fourteenth, of the same dimensions as one of the published charts, will be obtained; a work which would otherwise require many months of assiduous labour.

THE BRITISH ASSOCIATION CATALOGUE OF STARS.—In a book-list circulated during the last week by a Dresden firm, a copy of this Catalogue has a price of 200 marks (10*l.*) attached, excused by the addition, "Aeusserst selten." As regards star-places the volume is out of date, and the same may be said of the so-called constants for reduction of mean to apparent positions, if any degree of accuracy be required; but it is nevertheless still sought after, especially by those who are commencing the study of astronomy, as will be well known to every one who has any pretence to be considered a practical authority; and it must be admitted that, for purposes of identification and for synonyms in some of the principal older catalogues, the B.A.C. has still its uses. The question arises, whether there would not be a considerable demand for a new general Catalogue of the principal stars, or of stars to the limit of naked-eye vision, brought up from the best authorities to, say, the epoch 1900, but unencumbered with the reduction-quantities, which would materially diminish the expense of formation. A Catalogue of this description, we take it, is not likely to be again provided from the funds of such a body as the British Association, and perhaps the most feasible method of producing it would be by way of subscription. One difficulty would no doubt consist in securing a supervisor of the plan and formation of the work;—perhaps few competent persons could be named who have the leisure which Baily fortunately possessed, and to which we owe not only the B.A.C. but the Catalogues of Lalande and Lacaille.

THE COMET 1884*b*.—Prof. Krueger's telegram to Melbourne led to the observation of this comet, both by Mr. Ellery and Mr. Tebbutt on July 24. Mr. Tebbutt sends us several letters which he has addressed to the *Sydney Morning Herald*.

THE BRITISH ASSOCIATION

REPORTS

Report of the Committee, consisting of Dr. Gladstone, F.R.S. (Secretary), Mr. William Shaen, Mr. Stephen Bourne, Miss Lydia Becker, Sir John Lubbock, Bart., M.P., F.R.S., Dr. H. W. Crosskey, Sir Henry E. Roscoe, F.R.S., Mr. James Heywood, F.R.S., and Prof. N. Sory Maskelyne, M.P., F.R.S., for the Purpose of Continuing the Inquiries relating to the Teaching of Science in Elementary Schools.—Since the reappointment of your Committee at Southport no legislation affecting the teaching of science in elementary schools has taken place, and it is yet too early to estimate the whole influence of the Education Code of 1882 in that respect. Some indications, however, have been gathered from the Blue-book and from some of the large Boards. The first effect of the change of Code upon the teaching of science is shown in the return of the Education Department for this year; but as the tabulated statements only extend to August 31, 1883, they contain merely the results of those examinations that were made of schools which came under the new Code between April 1 and August 1, 1882, or about 28 per cent. of the whole. The following conclusions may be drawn: (1) Elementary science was taken up by scarcely any schools examined during these months, the number of departments that took it up as the second class subject being only 15, while 3988 took up geography, 1644 (girls) needlework, and 114 history. It must be remembered that geography is more scientific than it was before, but needlework is rapidly displacing it in girls' schools. (2) The exclusion of the Fourth Standard from instruction in specific subjects has reduced the number of scholars so taught by 56.6 per cent.; but the remaining 43.4 per cent., that is to say, the children in Standards V., VI., and VII., do receive a larger proportion of scientific teaching. The actual number of children examined during these four months in the mathematical and scientific specific subjects is given in Column I. of the following table; Column II. gives the estimated number who would have been examined under the old Code; Column III. the number of those who would have been above Standard IV.

Subject	Col. I.	Col. II.	Col. III.
Algebra	8,256	...	799
Euclid and Mensuration ...	604	1,847	...
Mechanics, Scheme A ...	635	...	603
" Scheme B ...	—	1,393	...
Animal Physiology ...	7,078	8,537	3,696
Botany	1,020	642	278
Agriculture (principles of)...	422	—	—
Chemistry	368	—	—
Sound, Light, and Heat ...	196	—	—
Magnetism and Electricity...	1,133	—	—
Domestic Economy	6,090	16,890	7,232
Totals	25,802	29,309	12,608

Comparing Columns I. and II., it will be seen that the actual number examined in these subjects is not much less than would have been examined under the old Code, when the Fourth Standard was included; but the number of girls who have taken up domestic economy is 10,800 less. If we compare Column I. with Column III., which embraces the same Standards, it appears that double the number of children have passed in these mathematical and scientific subjects. This is, no doubt, mainly due to the fact that English literature and physical geography are removed to the category of class subjects. The great gain has evidently been to the study of algebra, that subject and Euclid being taken up by about eleven times as many as previously took up mathematics. Animal physiology and botany have also largely increased. Mechanics is about the same, while of the new subjects magnetism and electricity has proved itself the favourite, while agriculture, chemistry, and sound, light, and heat follow in order. The only subject that has actually lost ground is domestic economy, which is no longer obligatory in girls' schools if a specific subject is taken. The following table gives the number of passes in specific subjects made by the London School Board children in 1881-82, and in 1883-84. The second column gives the estimated number of those that were made in Standards above IV., corresponding to Column III. in the previous table.